

## **Hydroxyl and superoxide anion radical scavenging activities of natural source antioxidants using the computerized JES-FR30 ESR spectrometer system.**

**Noda Y, Anzai K, Mori A, Kohno M, Shinmei M, Packer L**

***Biochem Mol Biol Int* 1997 Jun 42:1 35-44**

### **Abstract**

Free radical scavenging activities of water-soluble extracts from some natural sources, health foods, and antioxidant substances were measured using the JES-FR30 JEOL spectrometer. The objective was to develop a standardized method whereby comparison could be made between the radical scavenging activities of complex mixtures. Scavenging of hydroxyl radical was determined using DMPO.

Activity was calibrated using a standard material, L-ascorbic acid 2-[3,4-dihydro-2,5,7,8-tetramethyl-2-(4,8,12-trimethyltridecyl)-2H-1-benzopyran-6-yl-hydrogen phosphate] potassium salt (EPC-K1), an analog of vitamin C and vitamin E which is water soluble and

stable at room temperature. The order of greatest hydroxyl radical scavenging activity was green tea extract, pine bark extract

(Pycnogenol), Ginkgo Biloba extract (EGb 761), a flavonoid blend of several fruit and vegetable extracts (GNLD), and Bio-Normalizer

(Sun-O Corp). Activity was determined after treatment of samples with ascorbic acid oxidase. This treatment revealed the presence

of ascorbate in some natural extracts and commercial preparations. The pine bark extract was the most heat resistant and had

ascorbate-like activity in the preparations. Scavenging of superoxide anion was determined using the spin trap,

5,5-dimethyl-1-pyrroline-N-oxide (DMPO), and analyzed by comparison with a standard curve made with superoxide dismutase.

Comparison of the water solubilized components of natural source antioxidants showed that filtrates fractionated using centrifuge type

Millipore filter tubes (M.W. < 100,000; M.W. < 10,000) also had almost the same SOD-like activity.

Samples were also treated with

ascorbate oxidase or by heating (100 degrees C for 10 min). The order of activity, from greatest to least, was Ginkgo biloba extract

EGb 761, pycnogenol, beta-catechin, tea and BioNormalizer.

Application Serial No. 09/336,920 - Filed June 21, 1999

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

Inventor:

Broadwin, et al.

Serial No.: 09/336.920

**Filing Date: June 21, 1999**

**For: INTERACTIVE TELEVISION  
SYSTEM AND METHOD  
HAVING ON-DEMAND  
WEB-LIKE NAVIGATIONAL  
CAPABILITIES FOR  
DISPLAYING REQUESTED  
HYPERLINKED WEB-LIKE  
STILL IMAGES ASSOCIATED  
WITH TELEVISION CONTENT**

Examiner: Huynh, Son P.

Group Art No.: 2611

Atty. Dkt. No.: 5180-01106

I hereby certify that this correspondence is being sent via facsimile to: Facsimile No. 703-872-9306, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on the date indicated below:

B. Noël Kivlin

Name of Registered Representative

1-21-05  
Date

Date \_\_\_\_\_

**Signature**

APR 21 2005

## TERMINAL DISCLAIMER

**Commissioner for Patents**  
**P.O. Box 1450**  
**Alexandria, VA 22313-1450**

1. Sun Microsystems, Inc. and OpenTV, Inc. are joint owners of all rights in the captioned application, as evidenced by the recorded assignments, of which copies thereof are attached, in the United States Patent and Trademark Office at Reel 008263, Frame 0791, and Reel 010238, Frame 0939.

2. As joint owners in the captioned application, Sun Microsystems, Inc. and OpenTV, Inc. hereby disclaim, except as provided below, the terminal part of the statutory term of any patent granted on the captioned application, which would extend beyond the expiration date of the full statutory term defined in 35 U.S.C. §154 to §156 and §173, as presently shortened by any terminal disclaimer, of prior U.S. Patent No. 5,903,816.

3. Sun Microsystems, Inc. and OpenTV, Inc. hereby agree that any patent so granted on the captioned application shall be enforceable only for and during such period that it and the prior

Application Serial No. 09/336,920 - Filed June 21, 1999

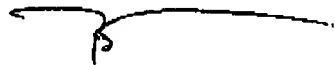
patents are commonly owned. This agreement runs with any patent granted on the captioned patent application and is binding upon the grantee of such patent, and its or his successors or assigns.

4. In making the above disclaimer, Sun Microsystems, Inc. and OpenTV, Inc. do not disclaim the terminal part of any patent granted on the captioned patent application that would extend to the expiration date of the full statutory term as defined in 35 U.S.C. §154 to §156 and §173 of U.S. Patent No. 5,903,816, as presently shortened by any terminal disclaimers, in the event that any of such prior patents later: expires for failure to pay a maintenance fee, is held unenforceable, is found invalid by a court of competent jurisdiction, is statutorily disclaimed in whole or terminally disclaimed under 37 C.F.R. §1.321, has all claims canceled by a reexamination certificate, is reissued, or is in any manner terminated prior to the expiration of its full statutory term as presently shortened by any terminal disclaimer.

5. The undersigned is an attorney of record.

A Fee Authorization form is enclosed to cover the fee for this disclaimer; however, the Commissioner is authorized to charge any additional fees that may be required, or credit any overpayment, to Meyertons, Hood, Kivlin, Kowert & Goetzel, P.C. Deposit Account No. 501505\5180-01106\BNK.

Respectfully submitted,



B. Noel Kivlin  
Attorney for Applicants  
Reg. No. 33,929

Meyertons, Hood, Kivlin, Kowert & Goetzel, P.C.  
P.O. Box 398  
Austin, TX 78767-0398  
(512) 853-8840

Date: 1-21-05

Application Serial No. 09/336,920 - Filed June 21, 1999

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

Inventor:

Broadwin, et al.

Serial No.: 09/336,920

**Filing Date:** June 21, 1999

**For: INTERACTIVE TELEVISION  
SYSTEM AND METHOD  
HAVING ON-DEMAND  
WEB-LIKE NAVIGATIONAL  
CAPABILITIES FOR  
DISPLAYING REQUESTED  
HYPERLINKED WEB-LIKE  
STILL IMAGES ASSOCIATED  
WITH TELEVISION CONTENT**

Examiner: Huynh, Son P.

Group Art No.: 2611

Atty. Dkt. No.: 5180-01106

I hereby certify that this correspondence is being sent via facsimile to: Facsimile No. 703-872-9306, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on the date indicated below:

B. Noël Kivlin

Name of Registered Representative

Date \_\_\_\_\_

**Signature**

### FEE AUTHORIZATION

JAN 21 2005

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

The Commissioner is hereby authorized to charge the following fee to Meyertons, Hood, Kivlin, Kowert & Goetzel, P.C. Deposit Account Number 50-1505/5180-01106/BNK:

<b>Fee:</b>	<b><u>Terminal Disclaimer</u></b>
<b>Amount:</b>	<b><u>\$130.00</u></b>
<b>Attorney Docket No.:</b>	<b><u>5180-01106</u></b>

The Commissioner is also authorized to charge any extension fee or other fees, which may be necessary to the same account number.

Respectfully submitted,

**B. Noël Kivlin**  
**Attorney for Applicants**  
**Reg. No. 33,929**

Meyertons, Hood, Kivlin, Kowert & Goetzel, P.C.  
P.O. Box 398  
Austin, TX 78767-0398  
(512) 853-8840  
Date: 1-21-95